

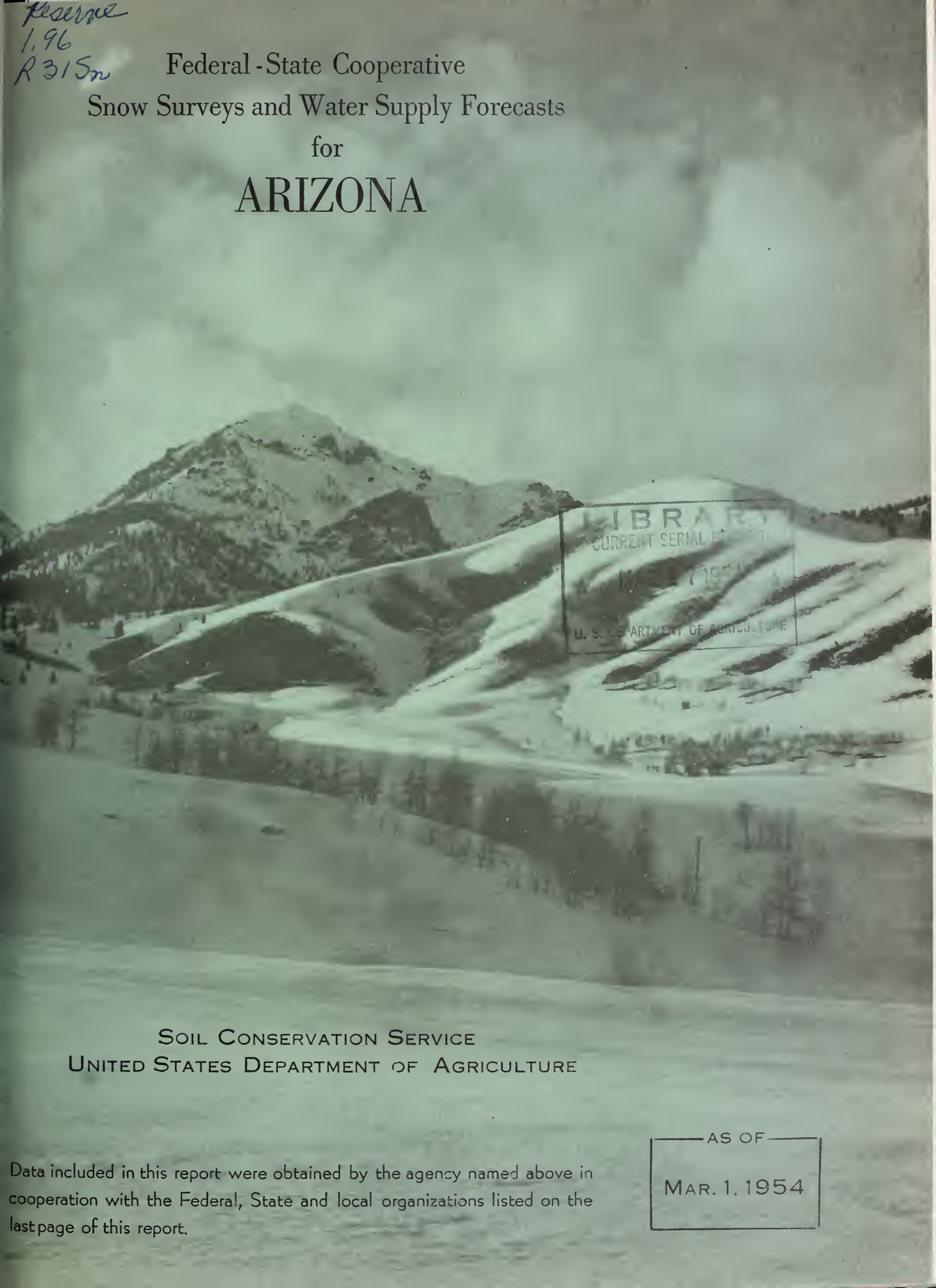
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Federal-State Cooperative  
Snow Surveys and Water Supply Forecasts  
for  
**ARIZONA**



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MAR 1 1954  
U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE  
UNITED STATES DEPARTMENT OF AGRICULTURE

Data included in this report were obtained by the agency named above in cooperation with the Federal, State and local organizations listed on the last page of this report.

AS OF  
MAR. 1, 1954

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY  
AND WATER SUPPLY FORECAST REPORTS:

Forecasts by U. S. Weather Bureau of total annual streamflow October-September, inclusive, at more than 300 gaging stations are issued monthly January through May in the publication WATER SUPPLY FORECASTS FOR THE WESTERN UNITED STATES.

Weather Bureau forecasts of runoff presented in that bulletin are computed from procedures based on mathematical analysis of the relation between precipitation and runoff.

The Weather Bureau bulletins may be secured by writing to:

Hydrologist in Charge  
River Forecast Center  
U. S. Weather Bureau  
712 Federal Office Building  
Kansas City 6, Missouri

For current information on local river and flood conditions, reference should be made to the appropriate River District Office, listed below:

Meteorologist in Charge.....	Colorado River and
Weather Bureau Airport Station	tributaries in Arizona
3000 Sky Harbor Blvd.,	except San Juan
Phoenix, Arizona	

State of Arizona

FEDERAL-STATE COOPERATIVE  
SNOW SURVEYS AND IRRIGATION WATER FORECASTS  
FOR  
ARIZONA

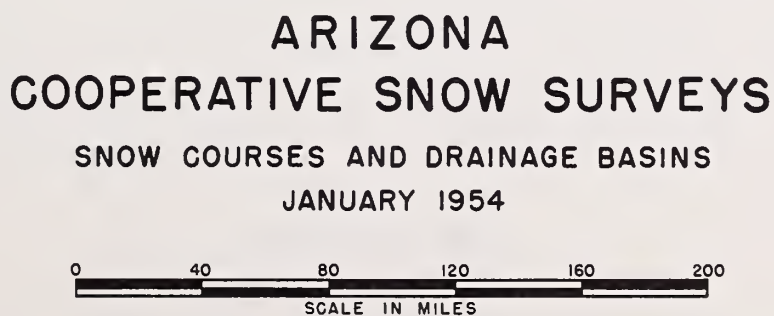
Report Prepared

by

W. E. Anderson - Snow Survey Leader

Soil Conservation Service  
39 North Sixth Avenue  
Phoenix, Arizona





# INDEX TO SNOW COURSES

NUMBER	NAME	SEC	TWP	RGE*	ELEVATION
<u>LITTLE COLORADO RIVER</u>					
1.	Forest Dale	2	9N	21E	6,000
2.	McNary	14	8N	23E	7,200
3.	Nutriso	23	6N	30E	8,500
4.	Mormon Lake	13	18N	8E	7,350
5.	Fort Valley	22	22N	6E	7,350
7.	Gentry	36	11N	15E	7,600
8.	Heber	28	11N	15E	7,600
9.	Canyon Creek	18	11N	15E	7,500
11.	Mormon Mountain	14	18N	8E	7,500
12.	Happy Jack	30	17N	9E	7,630
<u>WILLIAMS RIVER</u>					
1.	Iron Springs	22	14N	3W	6,200
2.	Camp Wood	3	16N	6W	5,700
3.	Willow Ranch	16	21N	11W	5,000
<u>GILA RIVER</u>					
1.	Frisco Divide (N.M.)	31	6S	20W**	8,000
2.	State Line (N.M.)	6	6S	21W	8,000
3.	Nutriso	23	6N	30E	8,500
4.	Coronado Trail	26	5N	30E	8,000
5.	Beaver Head	13	4N	30E	8,000
6.	Taylor Creek (N.M.)	20	10S	10W**	7,850
7.	Inman (N.M.)	6	11S	10W**	7,800
8.	Rose Canyon	15	12S	16E	7,300
9.	Bear Wallow	6	12S	16E	8,100
10.	Black Canyon (N.M.)	8	13S	11W**	6,790
11.	Mogollon (N.M.)	2	11S	19W**	7,000
<u>VERDE RIVER</u>					
1.	Iron Springs	22	14N	3W	6,200
2.	Camp Wood	3	16N	6W	5,700
3.	Mingus Mountain	3	15N	2E	7,100
4.	Morman Lake	13	18N	8E	7,350
5.	Fort Valley	22	22N	6E	7,350
6.	Chalender	27	22N	3E	7,100
8.	Munds Park	7	18N	7E	6,500
9.	Casner Park	19	18N	8E	6,930
10.	Antelope Park				7,300
11.	Mormon Mountain	14	18N	8E	7,500
12.	Happy Jack	30	17N	9E	7,630
<u>SALT RIVER</u>					
1.	Forest Dale	2	9N	21E	6,000
2.	McNary	14	8N	23E	7,200
3.	Nutriso	23	6N	30E	8,500
4.	Coronado Trail	26	5N	30E	8,000
5.	Milk Ranch	28	8N	23E	7,000
7.	Gentry	36	11N	15E	7,600
8.	Heber	28	11N	15E	7,600
9.	Canyon Creek	18	11N	15E	7,500
11.	Big Lake Knoll	3	5N	28E	8,800
12.	Maverick Ford	13	6N	27E	9,050
13.	Baldy	28	7N	27E	9,000
14.	Ft. Apache	18	7N	27E	9,160
15.	Pacheta	At Town of Maverick, Arizona			7,800
17.	Workman Creek	33	6N	14E	6,900
<u>LOWER COLORADO RIVER</u>					
1.	Bright Angel	34	33N	3E	8,400
2.	Grand Canyon	21	30N	4E	7,500
5.	Fort Valley	22	22N	6E	7,350
6.	Chalender	27	22N	3E	7,100

\* All in Gila and Salt River Base and Meridian except where otherwise indicated.

\*\* New Mexico Principal Meridian

## WATER SUPPLY OUTLOOK

### ARIZONA

March 1, 1954

\* \* \* \* \*  
March 1 snow surveys show practically all run-  
\* off producing snow has disappeared. Ground \*  
covered by snow is estimated at not over 50% in  
\* the Baldy area and 20% in the Mormon Mountain \*  
area. Warm weather is melting the remaining  
\* snow rapidly but the soil moisture condition is \*  
generally dry and the small amounts of water  
\* resulting from the snow melting is being absorbed \*  
readily by the soil. Unless additional snow  
\* storms or substantial rains occur, only base \*  
flows can be anticipated from all streams.  
\* \* \* \* \*

### WATERSHED CONDITIONS

There is no snow run-off occurring at the present time, in spite of warm weather and rapidly melting snow. Streams are all clear and low, and many remain dry. The snow line is reported at about 8500 feet, with snow very spotty.

Snow is melting rapidly, and that which remains is very wet. The soil is still below normal in moisture content and is absorbing most of the water resulting from snow melting. Soil moisture will be below normal after all snow melt has occurred except in limited areas.



## STREAM FLOW FORECASTS

Runoff potential has not improved since the February 15 report. Estimate presented below represent new base flow indications. Occasionally, late storms result in increases in snow stored moisture sufficient to be significant, but seldom in dry years. Spring rains which result in substantial runoff also occur occasionally but again usually not in dry years. Long range weather forecasts at present do not seem to hold much promise for precipitation much above normal. It would appear, therefore, that current stream stages are unlikely to be exceeded except as a result of extensive rain or unseasonable storms.

On the basis of current conditions, the following forecasts of water supply, for the period March through May, are made:

River	At	February - May
		Inclusive Discharge Forecast Acre Feet *
Salt	Intake	40,000
Tonto	Roosevelt	3,000
Verde	Horseshoe	40,000
Gila	Virden	7,500
Frisco	Clifton	6,500

\*These figures represent base flow estimates based on past records and present trend changes and would constitute new base flow quantities.



## ARIZONA SNOW SURVEYS MARCH 1, 1954

DRAINAGE BASIN and SNOW COURSE			SNOW COVER MEASUREMENTS						
			1954			Past Record			Year of Recd
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)			
No.	Elev.					1953	1952	Average	
GILA RIVER									
Frisco Divide	1	8,000	3-1	0.4	0.2	2.2	2.3	2.0	13
State Line	2	8,000	3-1	0.6	0.3	2.0	2.6	2.7	16
Nutriso	3	8,500	3-1	0.2	0.1	0.6	2.9	2.1	16
Coronado Trail	4	8,000	3-1	0.0	0.0	1.7	4.8	3.4	16
Beaverhead	5	8,000	3-1	0.0	0.0	2.6	4.0	3.4	15
Taylor Creek	6	7,850	3-1	0.0	0.0	1.4	1.0	0.6	11
Inman	7	7,800	3-1	T	T	1.3	1.0	0.8	7
Rose Canyon*	8	7,300	3-1	0.0*	0.0*	2.5*	0.0*	0.9*	3
Bear Wallow*	9	8,100	3-1	3.2*	1.5*	3.7*	0.0*	2.5*	6
Black Canyon	10	6,790	3-1	0.0	0.0	0.5	-	0.5	1
Mogollon	11	7,000	3-1	0.0	0.0	1.8	-	1.8	1
Average				0.1	0.1	1.6	2.6	1.9	
SALT RIVER									
Forest Dale	1	7,000	2-28	0.0	0.0	0.0	0.0	1.2	15
McNary	2	7,200	2-28	9.4	3.8	0.4	T	2.8	15
Nutriso	3	8,500	3-1	0.2	0.1	0.6	2.9	2.1	16
Coronado Trail	4	8,000	3-1	0.0	0.0	1.7	4.8	3.4	16
Beaverhead	5	8,000	3-1	0.0	0.0	2.6	4.0	3.4	15
Milk Ranch	5	7,000	2-28	0.0	0.0	0.2	T	0.9	13
Gentry	7	7,600	3-3	T	T	-	-	1.0	2
Heber	8	7,600	3-3	T	T	6.0	-	2.9	3
Canyon Creek	9	7,500	3-3	T	T	-	-	1.6	2
Maverick Fork	12	9,020	3-2	11.7	4.1	4.4	14.9	8.7	3
Baldy	13	9,125	3-2	17.2	5.2	6.3	12.2	6.9	4
Ft. Apache	14	9,160	3-2	20.4	5.4	5.9	12.4	6.5	4
Pacheta	15	7,800	3-1	0.0	0.0	-	6.0	3.0	3
Workman Creek	17	6,900	3-3	0.0	0.0	2.2	0.0	1.1	2
Average				4.5	1.4	2.8	5.2	3.2	
VERDE RIVER									
Iron Springs	1	6,200	2-26	0.0	0.0	0.7	2.4	1.8	8
Camp Wood	2	5,700	3-1	0.0	0.0	0.7	1.7	1.1	8
Mingus Mountain	3	7,100	3-4	0.0	0.0	1.0	0.9	1.8	7
Mormon Lake	4	7,350	3-4	T	T	2.1	8.4	6.3	7
Fort Valley	5	7,350	3-1	T	T	0.9	6.4	2.9	7
Chalender	6	7,100	3-1	4.1	1.6	2.0	6.2	3.5	7
Munds Park	8	6,500	3-4	0.0	0.0	0.8	-	1.0	3
Casner Park	9	6,930	3-4	0.0	0.0	1.1	6.8	3.3	3
Morman Mountain	11	7,500	3-4	T	T	2.9	9.2	5.2	4
Happy Jack	12	7,630	No Report			-	7.0	4.2	2
Gaddes Canyon	13	7,600	3-4	T	T	-	-	-	0
Average				0.4	0.2	1.4	5.4	3.1	

\*Not included in averages



## ARIZONA SNOW SURVEY MARCH 1, 1954

DRAINAGE BASIN and SNOW COURSE			SNOW COVER MEASUREMENTS						
			1954			Fast Record			Year of Reco.
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)			
No.	Elev.					1953	1952	Average	
WILLIAMS RIVER									
Iron Springs	1	6,200	2-26	0.0	0.0	0.7	2.4	1.8	8
Camp Wood	2	5,700	3-1	0.0	0.0	0.7	1.7	1.1	8
Willow Ranch	3	5,000	No Report			0.5	0.7	0.3	7
Average				0.0	0.0	0.6	1.6	1.1	
LOWER COLORADO RIVER									
Bright Angel	1	8,400	3-1	22.0	4.8	5.0	17.5	9.8	7
Grand Canyon	2	7,500	3-1	T	T	0.4	4.5	2.4	7
Fort Valley	5	7,350	3-1	T	T	0.9	6.4	2.9	7
Chalender	6	7,100	3-1	4.1	1.6	2.0	6.2	3.5	7
Average				6.5	1.6	2.1	8.7	4.7	
LITTLE COLORADO RIVER									
Forest Dale	1	7,000	2-28	0.0	0.0	0.0	0.0	1.2	15
McNary	2	7,200	2-28	9.4	3.8	0.4	T	2.8	15
Nutriso	3	8,500	3-1	0.2	0.1	0.6	2.9	2.1	16
Mormon Lake	4	7,350	3-4	T	T	2.1	8.4	6.3	7
Fort Valley	5	7,350	3-1	T	T	0.9	6.4	2.9	7
Gentry	7	7,600	3-3	T	T	-	-	1.0	2
Heber	8	7,600	3-3	T	T	6.0	-	2.9	3
Canyon Creek	9	7,500	3-3	T	T	-	-	1.6	2
Mormon Mountain	11	7,500	3-4	T	T	2.9	9.2	5.2	4
Happy Jack	12	7,630	No Report			-	7.0	4.2	2
Average				1.1	0.4	1.8	4.8	3.0	



# STATUS OF RESERVOIR STORAGE MARCH 1, 1954

BASIN and STREAM	RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSAND ACRE FEET IN STORAGE ABOUT MARCH 1				10-Year Average 1942-1951
			1954	1953	1952	1951	
Agua Fria	Lake Pleasant	1,178	33	82	124	1	16
Colorado	Lake Havasu	688	620	608	598	622	596
Colorado	Lake Mohave	1,810	1,691	1,591	1,612	1,507	-
Colorado	Lake Mead	27,935	16,242	18,312	16,540	17,236	18,951
Gila	San Carlos	1,285	0	8	155	1	207
Verde	Bartlett	180	40	38	153	9	39
Verde	Horseshoe	143	11	1	55	1	13 *
Salt	Roosevelt	1,382	572	1,014	496	5	485
Salt	Apache	245	243	221	202	164	201
Salt	Canyon	58	57	57	40	55	36
Salt	Saguaro	70	57	57	46	48	26

\* Average for years 1946 through 1951.



# LIST OF SNOW SURVEYORS

<u>SNOW COURSE</u>	<u>SURVEYOR</u>
Baldy . . . . .	SCS and SRVWU
Bear Wallow . . . . .	Wm. Hughes
Beaver Head . . . . .	Jess Burke
Black Canyon . . . . .	E. Van Winkle
Bright Angel . . . . .	Valentine
Camp Wood . . . . .	Mrs. C. C. Merritt
Canyon Creek . . . . .	SCS and SRVWU
Casner Park . . . . .	SCS and SRVWU
Chalender . . . . .	V. J. Schroeder
Coronado Trail . . . . .	Frank Casanova
Forest Dale . . . . .	Wm. Fair
Frisco Divide . . . . .	J. B. Shumate
Ft. Apache . . . . .	SCS and SRVWU
Fort Valley . . . . .	A. P. Loska
Gaddes Canyon . . . . .	Richard Enz
Gentry . . . . .	SCS and SRVWU
Grand Canyon . . . . .	C. E. Lehnert
Happy Jack . . . . .	Emil Ryberg
Heber . . . . .	SCS and SRVWU
Inman . . . . .	F. M. Inman
Iron Springs . . . . .	Ernest Saxby
Maverick Fork . . . . .	SCS and SRVWU
Milk Ranch . . . . .	Wm. Fair
Mingus Mountain . . . . .	Richard Enz
Mogollon . . . . .	J. R. Wray
Mormon Lake . . . . .	SCS and SRVWU
Mormon Mountain . . . . .	SCS and SRVWU
Munds Park . . . . .	SCS and SRVWU
McNary . . . . .	Wm. Fair
Nutrioso . . . . .	Frank Casanova
Pacheta . . . . .	Foch Phillips
Rose Canyon . . . . .	Wm. Hughes
State Line . . . . .	J. B. Shumate
Taylor Creek . . . . .	F. M. Inman
Willow Ranch . . . . .	L. W. Miller
Workman Creek . . . . .	C. L. Moore



The following organizations cooperate in the Arizona snow survey work:

FEDERAL

Department of Agriculture

Forest Service

Apache Forest  
Coconino Forest  
Coronado Forest  
Gila Forest  
Kaibab Forest  
Prescott Forest  
Sitgreaves Forest  
Southwestern Forest and Range Experiment  
Station, Fort Valley, Arizona  
Sierra Ancha Forest Experiment Station

Soil Conservation Service

Department of Commerce

Weather Bureau  
Arizona Section

Department of Interior

Bureau of Reclamation  
Region III  
Geological Survey  
Arizona District  
Bureau of Indian Affairs  
Fort Apache Reservation  
National Park Service  
Grand Canyon National Park

Gila Water Commissioner, Safford, Arizona

IRRIGATION PROJECTS

Salt River Valley Water Users' Association,  
Phoenix, Arizona

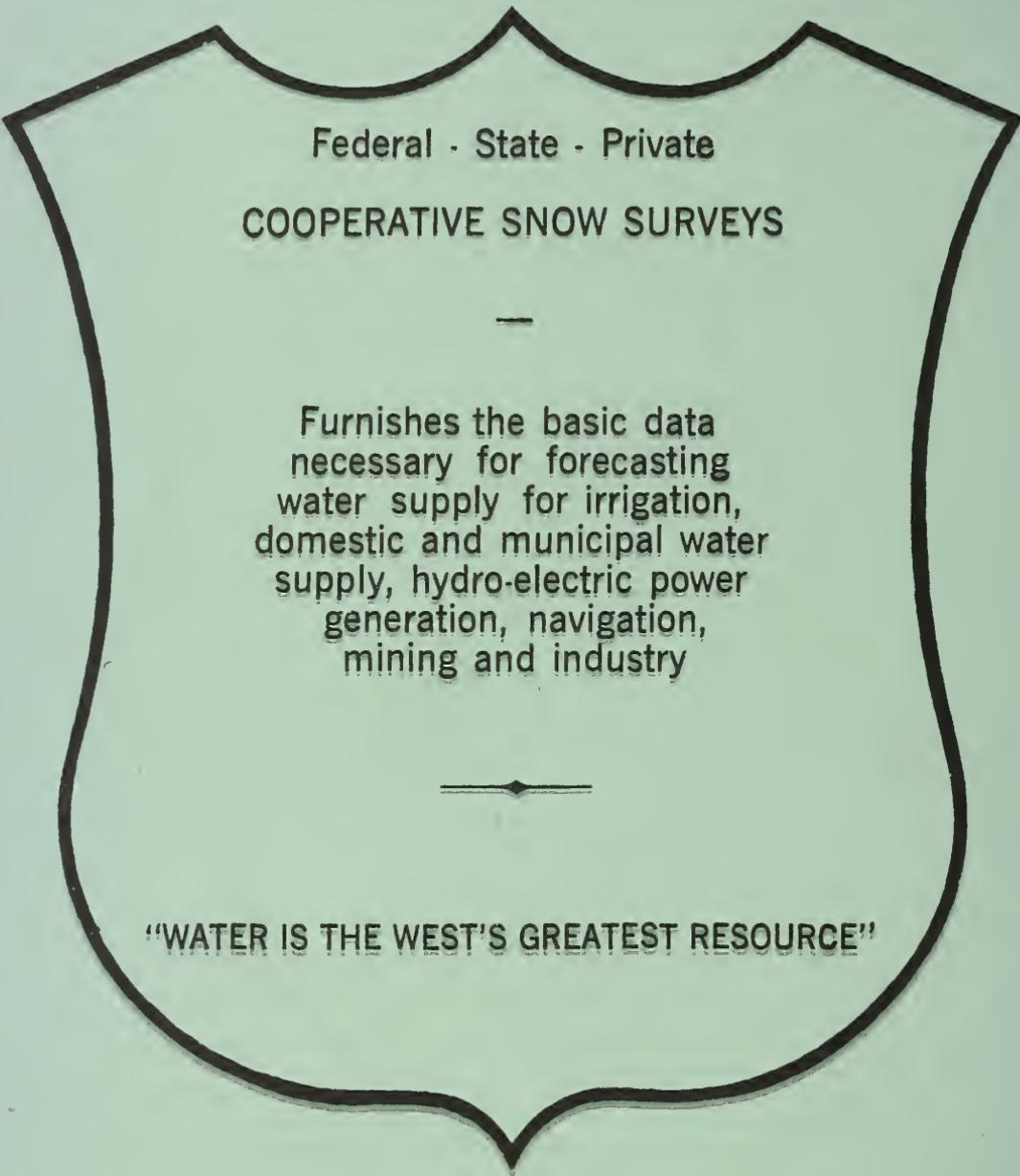
San Carlos Irrigation and Drainage District,  
Coolidge, Arizona

SOUTHWEST LUMBER MILLS, INC., McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their co-operation is gratefully acknowledged.







Federal - State - Private  
COOPERATIVE SNOW SURVEYS

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Furnishes the basic data  
necessary for forecasting  
water supply for irrigation,  
domestic and municipal water  
supply, hydro-electric power  
generation, navigation,  
mining and industry

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"WATER IS THE WEST'S GREATEST RESOURCE"